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Introduction

This paper is from a study on specialist and trade contracting in the construction industry. The research was commissioned by CIRIA and undertaken by the University of Reading in conjunction with Sir Alexander Gibb & Partners Ltd. The purpose of the work was to provide guidance for effective and equitable practice in the management of projects where much of the work is executed, and possibly designed, by specialist and trade contractors (STCs). As part of this study, a preliminary investigation into the nature and origins of specialist contracting was undertaken, in conjunction with a survey of the problems confronting STCs. This paper presents that phase of the project.

Background

All construction work involves either subcontracting or separate trades contracting. Therefore, development of the industry depends upon specialist and trade contractors. Herein lies a fundamental dilemma—the problems experienced by Specialist and Trade Contractors (STCs) are dominated by short term issues of business survival, whereas the development of an effective and efficient STC industry is a long term issue.

Business issues are especially difficult for subcontractors because they are inevitably subservient to the financial, contractual and procedural systems imposed upon them by main contractors. In addition, main contractors may attempt to protect their own interests by transferring risk to their subcontractors.

An example will illustrate this. Specialist subcontractors are particularly vulnerable when a significant design contribution is required from them. Where such a subcontractor is appointed too late for its design to be integrated into the normal design development, the work can become the subject of contention because it is very likely to be out of step with both design and construction. Such contention is the direct result of poor project management (i.e. the lateness of the appointment). The consequential effects on the main contractor's programme can have a "domino effect" on the work of other subcontractors due to variations and subsequent re-programming. The main contractor then has little choice but to fight off claims by the other subcontractors, using any commercial or contractual means available. Such a situation is a direct result of a general failure to understand and manage the complexity of the specialists' contribution. Experiences like this lead employers and contractors to protect themselves by including their own amended clauses in the contracts they sign. These are often interpreted as adversarial or onerous; typically covering issues related to payment, retention, liquidated damages, programme, set-off and attendance. Tackling these short term issues is mere fire fighting, and does nothing for the long term issue of developing a sound and competitive construction industry.

This example also illustrates the two categories of problem which always need separating. First, subcontracting is a mechanism for employing others without making them a part of one's own organisation. This is not a problem, as such. It is a common feature of modern

commerce and need not cause any difficulty. It becomes problematic in the construction industry because it is so frequently combined with other problems. Second, specialist and trade contractors have particular skills and ways of working which make their role and contribution not only critical to the success of the project, but also very complex and difficult to manage. The complexity associated with the integration of STC work is not diminished by any particular contract structure. Their contribution is important, regardless of the type of contract. The critical questions to focus upon are about who actually undertakes work on sites and about how best to harness their skills so that a positive contribution is made to the construction process.

The rise of specialist contracting

Significant factors combined to accelerate the change from direct employment to subcontracting and to specialist contracting. These powerful forces apply in a wider context to all industries but have been particularly significant in shaping the trading patterns in the construction industry. The purpose of this section is to consider the wider, general developments and provide a context for discussing the specific developments in the construction industry. Two things become clear from considering these factors; first, why these trading patterns have emerged and second, why it is not plausible simply to avoid subcontracting and specialist contracting.

The causes of increased levels of subcontracting

The general increase in subcontracting has been driven by technological, political, social and economic change:

- As technology grows more complex, more diverse skills are needed[1]. One way of securing competitive advantage is by being the best in a particular technology. The changes caused by modernisation are irreversible. The construction industry has yet to accommodate them fully.
- The UK government since 1979 has been committed to encouraging an enterprise-based culture centred on individual initiative and reducing the influence of the public sector[2]. This encourages those who wish to start new businesses.
- Changes in patterns of work and career structures have led to expectations for more autonomy and personal control. Coupled with a favourable tax regime at a personal level, this has helped to drive more people towards self-employment and specialisation[3].
- In responding to fluctuations in the economy, particularly the recent recessions, firms have concentrated on their core businesses. Subcontracting enables them to respond quickly to changes in demand and gives firms much flexibility in changing the size of their businesses. Similarly, as interest rates have been the government's primary tool of fiscal management, firms have developed tight financial controls as a response to the rapid changes in the cost of borrowing[4].

[1] Lawrence, P C and Lorsch, J W (1967) *Organisation and environment: managing differentiation and integration.* Harvard University Press; Massachusetts.
[2] Conservative Party Manifestos, 1979-1992.
[3] Handy, C (1989) *The age of unreason.* Arrow; London.
[4] Gray, C and Flanagan, R (1989) *The changing role of specialist and trade contractors.* CIOB; Ascot.

Construction projects and capital spending have always been hit first as key regulators of economic activity. This has required the construction industry to adapt more quickly than most. The general trends noted above were given an extra push in the construction industry because of separate events:

- In 1966, the government introduced *Selective Employment Tax* (SET), which was designed to tax firms on their payroll. Firms wanted to minimise their tax liability, so the immediate consequence of SET was that contractors sought alternatives to directly-employed labour.
- Although SET was repealed in 1972, its effects upon subcontracting were compounded because of the building strike in 1972 which led to a disinclination for general contractors to employ labour directly, and a consequent growth in subletting of labour. This enabled contractors to reduce their dependency on trade union labour. Coupled with the effects of SET, subcontracting enjoyed a tremendous surge in popularity.

These two events were mainly responsible for a sudden surge of labour-only subcontracting, alongside the trend towards increasing specialisation. There have been additional influences at the project level, particularly the approach to design in the UK, but also the need to spread both economic and legal risk.

The emergence of nominated subcontracting

A feature of subcontracting peculiar to construction is the practice of "nomination" which has evolved to cope with four major issues;

- the increasing sophistication of construction,
- the need to modify the main contractors' control over specialists,
- the role of the design team,
- the needs of clients.

These issues are expanded below. Nomination was a technique negotiated by representative bodies at UK industry level. As such it represented the best deal for all concerned at the time that it was developed. The following discussion traces the context and the rationale behind nomination, explaining how each sector of the industry benefited, before turning to a discussion of the reasons for its current unpopularity.

- **Increasing sophistication**
  Increasing technological complexity has been matched by increasing numbers of specialist contributions to the construction process. This is because the use of new technologies needs highly developed skills and expertise. The process of technological development is often driven further by the increasing specialisation of those who deal with it—they become better at innovating. Even those clients and designers who do not innovate for the sake of it find that economy of the process and market demand prompt them to use these new technologies. This relentless progress modifies the very nature of the construction process. The traditional assembly process is changed by the need to start procuring specialist elements at an early stage. Procuring these specialist components can take longer than the whole building. The answer is to specify, in advance, the installer of the components, leaving the main contractor no choice in the matter. The installer can then prepare the components so that they are ready for installation at the appropriate time. Failure to do this will result in the building site being kept waiting while the components are procured. The primary motivation behind nomination was the need to harness the skills of specialists before the main contractor was appointed. It is one of the strongest

arguments for nomination and has helped to spur the growth of specialist subcontracting.

Specialists favoured nomination because it protected them from unbridled market forces by enabling them to compete on some basis other than cost. It also enabled them to develop strong and stable business relationships with regular clients of the industry and with certain consultants. In the event of main contractor insolvency, some construction contracts make provisions for direct payments to nominated subcontractors. Further contractual protection arises from the provisions for adjudication of disputes between contractor and subcontractor.

- **Main contractors' risk**

  Main contractors tended to favour nomination since the work of nominated specialists is not part of the main contractors' lump sum, but a cost-reimbursement element. In projects with a large amount of nominated work, the contractor is more a co-ordinator than a fabricator of construction work; and a conduit for specialists' money.

  There are contractual advantages for main contractors, especially under JCT 80. Examples include the fact that delays on the part of nominated subcontractors qualify for an extension of the contract period. (The same is not true of civil engineering or government contracts.) Under standard-form contracts, main contractors usually enjoy a cash discount for prompt payments and often deduct the discount even when payment is not prompt.

  The lack of involvement in the selection of nominated subcontractors is seen as a disadvantage by main contractors.

- **The role of the design team**

  Nomination was favoured by design teams because it enabled them to do two things. First, they could influence the quality of detail by using only their preferred specialists. Second, they could avoid having to detail or re-design work done by technically incompetent domestic subcontractors who had been selected by the main contractor on price alone. Such re-design work would rarely enable the client's design team to claim payment.

  Cost consultants developed techniques of budgeting which encouraged competition among nominated specialists even though the main contractor was reimbursed for whatever was paid to such specialist subcontractors (prime cost sums). This allowed for continuing design development with the subcontractors, avoiding the traditional contractual chain. Also, since design liability did not apply to the main contractor, separate design agreements emerged to tie the specialist directly to the client. The significance of these features was a growing professional infrastructure around the nomination process, which would indicate a vested interest in retaining the status quo.

- **The needs of clients**

  Nomination protected clients' interests by providing some certainty of performance and by providing a direct contractual link (via the employer/specialist design agreement) with those who designed the specialist work. Many experienced clients have derived great benefits from developing stable business relationships with certain specialist subcontractors. Nomination enabled these clients to control the main contractor's selection process.

  Main contractors working for a lump sum stand to gain the most by competitively sub-letting their domestic subcontracts. Clients who wish subcontractors to be selected on criteria other than price can take control of the selection of subcontractors through the nomination procedure. This avoids the risk of choosing under-capitalised or inexperienced subcontractors.

The decline of nomination

The whole industry co-operated in the development and growth of nomination; it was popular. More recently, the practice of nomination has declined in popularity for several reasons:

- The complex matrix of contracts in nomination has been at the centre of some extremely difficult litigation. This has highlighted tremendous problems in the three-way relationship between client, contractor and subcontractor.
- The legal problems are especially difficult when a nominated subcontractor fails to perform properly or becomes insolvent.
- When the short-list of preferred specialists becomes very small, the lack of economic competition between them can unsettle consultants and clients.
- Worse, since the main contractor is reimbursed for all nominated subcontract work, the contractor's motivation to control expenditure might not be as strong as it would be for the priced work.
- Main contractors can face enormous practical difficulties because of the special nature of the relationships that specialists may have with clients and contract administrators.
- Main contractors have come to wish for as much control over specialist subcontractors as they have over their domestic subcontractors.
- Continuing and increasing exposure to liability of professional consultants has driven up professional indemnity premiums and there has been an increasing reluctance by consultants to accept liability for various aspects of construction work. By declining to nominate specialists, they avoid some of the liability associated with their design, co-ordination and performance.

For all of these reasons, the established patterns of nomination procedures are not being used. This leaves building clients vulnerable to the risks associated with lowest price bidding. It creates an atmosphere of tension and defensiveness that does not encourage best practice. The result is that the structure of the contractual relationships set up by nomination are no longer appropriate.

Alternatives to nomination

Disenchantment with the nomination processes has lead to a search for alternatives (such as "naming"). The alternatives may be watered down versions of nomination and as such they merely make the situation less well-defined, rather than offering clear solutions to the problems.

Management contracting appeared for a while to be a better approach, but the way that it is used in practice is often as another version of general contracting. There are procurement methods that offer more effective techniques of integration, such as design-build and construction management. The former places clear responsibility for everything with the main contractor; the latter reduces the main contractor's role to that of an advisor and co-ordinator. These offer clearer contractual structures, but in practice the relative economic power of the client and design team is undiminished; procurement methods do not alter the relative sizes of the firms involved. Since even small quite modest projects involve subcontracting, the UK construction industry is now largely dependent on small specialist firms who do not have the economic strength to insist on terms of business that enable them to perform properly. Therefore, despite continuing developments in contractual and procurement techniques, there is still conflict between the engines of activity, the specialist contractors and their clients. The root of this is the fact that others are usually involved in the

transaction between specialist and client.

Strategic issues for the industry

A healthy STC sector is essential to the continuing success and development of the construction industry. In some foreign industries the STC has been the focal point for improving efficiency and technical knowledge[5]. By contrast, the development of STCs in the UK has been conditioned by the factors outlined above. The constraints on the development of STCs have resulted in compromises that produce a far from ideal situation.

The economic recession has reduced the workload of contractors and specialists. Competition is more intense now than any time this century. Specialist firms are being invited to compete for work on increasingly onerous terms as clients and contractors seek to minimise their own exposure to risk. The existence of myriad small specialist firms[6] willing to work under onerous circumstances has enabled and encouraged these practices. Some successful STCs grew into large firms, and some large firms specialised to become STCs. While not all STCs are small firms, it is the preponderance of small firms (with which large firms must compete for work) which largely dictates the patterns of business relationships in construction. Therefore, although the large STC firms have, in theory, the economic muscle to resist onerous contracts, in practice any attempt to do so will result in the work being awarded to smaller, more acquiescent firms.

Large firms often employ small STCs as a defensive strategy. This strategy has little to do with the reasons that the small firms exist in the first place. This leads to a conflict of motivations: some STCs trade in this way so that they can better develop the technical competence that provides their competitive edge; others trade like this for purely economic reasons. Those who employ STCs do so either because this is the best way to harness technically sophisticated systems, or simply because it is an easy way to pass risk down the contractual chain. Either way, they employ STCs. It is therefore very difficult to distinguish the different types of behaviour without digging a little deeper. Indeed, for STCs and their employers, the two types of objective may be combined. This fundamental conflict remains to be resolved—not least because of the difficulty of detection. It is a major source of the problems facing the construction industry. The problems range from lack of co-ordination, poor management, and low quality through to late payments, defective work and ultimately insolvency.

Cash flow management

A significant feature of construction firms is their pattern of cash flow. Low profit margins and low overheads are normal in the construction industry[7]. But as workload reduces and competition increases margins are reduced to maintain the flow of work. In stable and certain conditions this would be a reasonable strategy, but construction projects are characterised by uncertainty. Payments to contractors can be constrained by the client and consultant team: clients do not always pay promptly and consultants do not always certify fairly[8]. Even a good contractor has little power over such blatant abuses of contractual provisions but can mitigate

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[5] Gray, C and Flanagan, R (1989) *op cit*

[6] Government Statistical Service (1991) *DoE housing and construction statistics.* HMSO; London.

[7] Government Statistical Service (1988) *Size analysis of UK businesses, 1988.* HMSO; London.

[8] Michael Sallis & Co Ltd v E C A Calil and Others [1987] 4 Con LJ 125; Pacific Associates and Another v Baxter and Others [1988] CILL 460; Chappell, D (1989) Is it worth suing and architect? *Building Today* 2 Feb, 24-25; Bingham, A (1992) A case to get you all steamed up. *Building* 3 Jul, **36**; John Mowlem & Co plc v Eagle Star Insurance Co Ltd, Eagle Star Property Management Ltd, Eagle Star Properties Ltd, Phippen Randall & Parkes Ltd 10-CLD-06-01.

the worst effects with strong and careful management. The contractor in turn controls payments to subcontractors. The contractor can manipulate payments to subcontractors and suppliers to offset problems with receiving payment. However, this behaviour can increase the level of uncertainty because the contract structure permits unscrupulous management and aggressive financial practices. Of course, less able and less scrupulous contractors exacerbate such situations. The contractual issues arising from these problems are dealt with later in this paper. In this section the commercial problems are highlighted.

The effect of delayed payment

Contractors' cash flows are very sensitive. Although a contractor's mark-up is usually portrayed as a proportion of the contract sum, the true picture only emerges when it is viewed in the light of cash flow and use of capital. The simple fact is that contractors are paid periodically and pay for their supplies periodically. This means that if they receive payment before they incur liability to pay their own bills, they have no capital tied up in the project. On the other hand, delays in the receipt of their money change the picture completely, especially if they cannot delay the payments they must make for their supplies. Thus, if profit is related to the capital tied up in a project, it is clear that even a slight delay in receiving payment can turn a profit into a loss. The same argument applies all the way down the contractual chain to subcontractors and their suppliers.

When mark-up is related to the use of capital, two things are revealed; first, the potentially high profits for contractors (and the appeal of such lucrative business) and second, the vulnerability of this return.

Every firm must avoid prolonged negative cash flows. The vagaries of bankers' lending policies and the manipulation of interest rates by governments add to the difficulties. Construction firms are particularly sensitive to disruptions in their cash flows, and therefore are more susceptible than most to changes in banking and government policies.

Payment

To reduce uncertainty it is vitally important that payments are made according to the agreement. Similarly it is important that the contract documents form an accurate record of the agreement. The results of the survey show that most payments are delayed. On average, STCs had to wait 11.5 days beyond the period stipulated in their contract, with only 15% being paid on time. The survey highlighted an interesting difference between the average payment periods for different sectors of the industry, see Table I.

Table I: Payment periods for different sectors of the industry

	Payment periods: (days)	
Sector of the industry:	Contractual	Actual
Building	24	34
Civil engineering	26	35
Services engineering	22	43

Reductions to payments

When margins are small it is important that completed work is valued fairly and paid in full so that the STC's cash flow is not threatened. However, for the reasons given above, certain practices are used by main contractors to mitigate their cash flow problems. These practices starve STCs of cash, thereby benefiting main contractors at STCs' expense. The survey showed that these practices are common. Although an STC may be spared from these

practices on one site, their presence on another site may easily have a "domino effect", especially when the victim becomes insolvent.

Under-valuation

There are often disputes over the measurement and valuation of STCs' work, particularly where an item has not been specified in the bill of quantities. One reason for this may be a contractor's reluctance to commit expenditure on STCs' unspecified work before agreeing it with the employer. Another is that contractors like to retain a financial buffer. Under most procurement methods, contractual mechanisms are provided to protect STCs from the worst excesses of some contractors. Because of this, a chain of measurement and approval follows the chain of contracts providing many opportunities for negotiation and dispute.

Set-off

Set-off can also reduce payments to subcontractors. This covers contractors for the expense of employing a replacement subcontractor to finish off the work if necessary. The survey revealed a high incidence of spurious counter-claims aimed at retaining as much money as possible. It also showed that genuine claims were rarely pursued through the courts and were usually settled by negotiation.

Pay-when-paid

The interviews and the survey revealed that even without a pay-when-paid clause in the contract it is quite common for contractors to withhold payments to subcontractors until their own payment has been received. This is another technique by which contractors can protect their own cash flows.

Variations

Variations are often not valued until long after their issue, which has the effect of delaying or even avoiding payment for the work. Many variations occur as a natural part of the evolution of the design details. This is difficult to trace and sometimes can only be adequately evaluated at the end of the project. When left this late it inevitably results in claims, counter-claims and protracted arguments. Variations clearly attributable to the client are not as problematic.

Final accounts

Further problems arise from unreasonable delays to final account settlement. When work is inadequately specified, or subject to excessive variations, there is inevitably much re-measurement and negotiation to be done after completion. The interviews have confirmed what earlier research studies[9] have revealed - that contractors, clients and consultants sometimes have little will to settle final accounts when they have got plenty of other, more lucrative work to distract them. Complex projects take even longer to settle. The final account process can to take up to ten years on major projects, being dependent upon the relationship between the client and design leader. The delay may be influenced by the implications for the design leader's PI insurance. Because of this, contractors and especially subcontractors must wait much longer than the payment period specified in their contracts. Only contractors and STCs with large cash reserves and/or healthy cash flows on other projects can sustain this level of disruption to their cash flow.

[9] Hughes, W P (1989) *The organisational analysis of building projects*. Unpublished PhD thesis, Faculty of the Built Environment, Liverpool John Moores University.

Background to procurement options

Much of the considerable experimentation with forms of procurement has been motivated by the desire to increase the interaction between the design and production processes[10]. The traditional lack of interaction between the design and production processes[11] has been exacerbated by the emergence of technologically sophisticated specialists whose work inherently involves some kind of specialist design. The traditional general contracting approach to procurement was based upon the assumption that the contractor tendered on a complete design, and had no design responsibility. Since the specialist subcontractor had a design contribution, and since the project design team needed this design information early in the project, it was inevitable that the traditional approach would prove inadequate, encouraging the use of other approaches.

The following sections do not attempt to define the procurement methods as such, since that has already been done elsewhere[12]. Instead, they focus upon the role of STCs within each method, and serve as an introduction to the contractual problems facing STCs and those who wish to use them.

General contracting

The most common form of procurement is still general contracting[13], typified by contracts such as JCT 80 and ICE 6 in the UK. There have been many developments to these basic forms to attempt to integrate the STC's design into the project design team's effort, notably various methods of nominating subcontractors or suppliers. Without the formal contractual mechanisms of nomination, general contracting inhibits proper links between the STC and the design team, all communication and liability flowing through the main contractor who will have no design liability. This can produce vague and uncertain patterns of responsibility and liability and, consequently, much dispute.

Design and build

Design and build is an equally established procurement method, but one that originated with the express purpose of establishing single-point responsibility. Under these forms of agreement, typified by JCT 81 and the ICE Design and Construct contract, the contractor takes on complete responsibility for design and construction. Traditionally, contractors have preferred to operate in this way when they have a special expertise. Designers have rarely advised its use except for projects that allow limited scope for innovation. More recently, however, with recessions biting into contractors' workloads, clients have invited contractors to tender based on this extended liability without having to pay a premium for the increased contractor's risk. Additionally, contractors have marketed their services more vigorously, and showed a willingness to take on such liability.

Design and build places more responsibility and liability on to the contractor than any other form of procurement. A major feature that separates design and build from general contracting is the lack of an independent certifying role for the lead designer. Without careful wording of the contract, it is likely that strict product liability (i.e. "fitness for purpose") would attach to a design and build contractor.

The straightforwardness of the liabilities in design-build, by comparison with general

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[10] Honeyman, S (Chmn) (1991) *Construction management forum: report and guidance.* Centre for Strategic Studies in Construction; Reading.

[11] Banwell, H (1964) *The placing and management of contracts for building and civil engineering works.* HMSO; London.

[12] Masterman, J (1992) *An introduction to building procurement systems.* Spon; London.

[13] Bound, C and Morrison, N (1991) Contracts in use. *Chartered Quantity Surveyor*. January, 9.

contracting, may not be appropriate for all types of project. The signs are that its use is growing not because of its technical or legal appropriateness, but because of the general shortage of work coupled with the possibility that many clients may have become disillusioned with other approaches. The clarity of the contract structure is appealing to clients and this provides a marketing opportunity to contractors. However, unless the choice of designer and specialists is left to the contractor, their involvement with the project may muddle the contractual simplicity.

Management contracting

As the technological complexity of projects increased, STCs became more sophisticated and it became increasingly necessary to manage their contribution, both in terms of design before construction, and physically during construction. In addition, commercial exigencies during boom periods enabled STCs and contractors to charge significant risk premiums in their tenders; where the contractual or commercial risks were high, tenders were high. The logical conclusion to this process is that the lowest bid often came from the contractor who had failed to appreciate the risks involved in the project.

The relationship between risk and tender premiums was a critical factor in the emergence of management contracting. In a technologically sophisticated development project, the contractual risks for the contractor are so high as to lead to inflated tenders. The clients for such a project may be in a stronger position to be able to bear the risk, especially if the client is a property developer who builds frequently. It is a fundamental principle of risk apportionment that where a client builds frequently, and has large resources, the uncertainty associated with contractual risk is reduced. This is analogous to the reasoning behind the government's lack of fire insurance for their buildings. They have so many buildings that the mathematical probability of a fire occurring somewhere approaches certainty. Therefore it is meaningless to pay someone else to absorb it. This is why it is in the interests of clients to be able to choose contractual forms which reduce, or eliminate, contractual risk for the contractor.

The dual pressures of a keener need for co-ordination, and the client's desire to reduce the contractor's exposure to risk in the main contract led to the development of management contracting. A management contractor was one who would be appointed at an early stage of the process, effectively joining the design team, to advise on management and production issues, ensure timely involvement of the STCs' designers and manage the site processes[14]. The absence of contractual risk and the lack of any significant site work suited this more "professional" role. The way in which management contracting was subsequently used in practice often ignored the reasons for its development. The economic situation has worsened and there is little scope for contractors to allow for risk in their tenders for high-risk projects whilst they are hungry for work. In many cases, management contracts have been amended by clients whose advisers fail to appreciate the reasons for relieving the management contractor of contractual risk. This happens to such an extent that the disposition of risk becomes almost indistinguishable from that in general contracting and some of the worst features recur. These factors have combined to reduce the appeal and usage of management contracting.

Construction management

A more recent development is "construction management". The demand for this method of procurement has been fuelled by clients who have become frustrated with the difficulties of securing an efficient output from the industry. In construction management, the client

[14] CIRIA (1984) *A Client's Guide to Management Contracting in Building*. Special Publication No 33, Construction Industry Research and Information Association; London.

employs all of the firms directly and provides the co-ordination and management through a consultant construction manager. In this way a cohesive design and construction organisation can be created, with the client absorbing the risks associated with co-ordination. A major feature of this approach is the way in which it elevates the status of the STCs to a major participating role which recognises their complete involvement with design and construction for their particular specialism. American and European practice is often cited as the origin of this technique, but in the context of the need to harness STCs without using vague or inappropriate contract structures, it is clearly a logical development of UK practice. In any event, similar practices (for example, Separate Trades Contracting) have been common in the UK, especially in the North of England and Scotland, until relatively recently[15]. The major difference between UK and overseas practice is that UK designers seek to retain control over the final details, thereby maintaining the complexity of the information problem, but under the management of an integrated and controlled regime.

The integration of STC work into the procurement method

There are many other forms of procurement, most of which are simply variations on these basic themes. All of them have arisen as a response to deficiencies in traditional systems of contracting[16]. The traditional division between designers and constructors arises because of the professionalisation of design in the UK. This is the custom in which the design team documents the design on behalf of the client, who then seeks tenders from contractors. Whilst there is nothing wrong with this in principle, its effectiveness is compromised by two connected factors. First, designers in the UK are particularly skilled at developing their designs to a great level of detail and seek to retain control over its realisation in order to ensure that the details reflect the underlying design philosophy. This is not a problem on its own. Second, STCs have an increasingly important role to play in the design process, taking part in the development of detailed design information. This is the root of the difficult problem of enabling designers to have access to specialist knowledge without abrogating or compromising their own design responsibility and without breaching their liability. Whichever form of procurement is used, its choice should be influenced by the particular nature of specialist design for each project.

Contractual issues in the procurement of STC work

The manner of the STC's engagement is largely dependent on the project procurement method. The survey (see appendix), in common with a similar survey by CASEC[17], has demonstrated a wide diversity in the standard forms available, as well as the fact that they are rarely used unamended. The amendments may often be trivial, but they frequently result in an employment regime not contemplated by those who originally drafted the standard forms.

Amendments to contract clauses arise for two reasons. First, contractors and clients are sometimes guilty of arbitrarily shifting the burden of risk on to the weakest contracting party. Second, contract practice should be revised continuously in order that the documents reflect the rapidly changing technological and commercial nature of the construction industry. In other words, some of these changes to the standard forms are bad practice, others are good practice.

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[15] Masterman, J (1992) *Op cit*

[16] Rougvie, A (1987) *Project evaluation and development.* Mitchell's; London.

[17] Greenwood, D J (1993) *Contractual arrangements and conditions of contract for the engagement of specialist engineering contractors for construction projects.* CASEC; London.

Payment

Management practices affecting cash flow have already been mentioned. Here we discuss typical contractual clauses and the amendments to standard-form contracts.

The biggest single difficulty experienced by STCs is in getting paid for work they have done[18]. This has been confirmed by the survey, where payment was singled out as the most frequently amended standard contract clause. It is arguable whether a main contractor should have to pay a subcontractor before receiving any money. The main contractor's view was succinctly put by a management contractor who was interviewed:

> *If we are getting a £100,000 fee on a £3,000,000 project, are we expected to act as a banker guaranteeing the subcontractors' payments? Pay-when-paid is not onerous on subcontractors from our point of view. Frequently, the clients use "shell" companies with no resources or capital. How can we guarantee payment from such organisations or assure the subcontractors of their financial stability? It is as simple as this: if we are not satisfied with a client's financial stability, then we don't build. Therefore, if we are going ahead, then clearly there is every likelihood of getting paid, and we don't need to be the client's guarantors.*

Even though pay-when-paid clauses are not always present in subcontracts, the research has shown that contractors often operate in this way as a matter of policy. However, under these circumstances, the lack of payment to a subcontractor is a normal commercial risk taken by all businesses, and the lack of a pay-when-paid clause means that the subcontractor has a right to legal recourse.

Retention is a source of payment problems. The survey showed that the most onerous subcontracts tie the release of a subcontractor's retention to the employer's release to the main contractor. Retention can present a considerable obstacle to effective cash flow and across the UK industry large amounts of money are tied up in this way[19].

Most standard forms of subcontract allow the main contractor to deduct between 2.5% and 7.5% for prompt payment to the subcontractor. However, surveys have shown that it is normal practice for contractors to pay late and yet still withhold the discount[20]. This may be due to the misleading practice in many standard forms of referring to this as a "cash discount", even though the intention is clearly to create a discount for promptness. A further problem is set-off. Although set-off can be applied under English law only in strictly defined circumstances, it may only be prohibited with express and unambiguous provision in the contract.[21] It was clear from the survey that spurious claims and contra-charges were causing severe disruptions to the cash flows of STCs. At a time of economic recession, these disruptions are sufficient to render firms insolvent.

Clearly, many payment problems are a direct consequence of the recession. A main contractor who is suffering cash flow difficulties can temporarily counteract them by withholding payments to subcontractors. Thus, the solvency of one firm is assured only be jeopardising the solvency of another. The problem here is that, in practice, it is very difficult to distinguish these causes from other, more valid causes.

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[18] Greenwood, D J (1993) *Op cit*

[19] Middleboe, S (1992) Subbies plan mutual option for retention. *New Builder.* 1 Oct, 6.

[20] Confederation of Construction Specialists. (1992) *Corruption of the commercial process.* CCS; Aldershot: Barrick, A (1992) Payment scandal hits subbies and clients. *Building*.47 CCLVII, 20 Nov, 10.

[21] *Gilbert Ash (Northern) Ltd. V Modern Engineering (Bristol) Ltd.* [1974] AC 689 at 717, HL, per Lord Diplock; *C M Pilings & Co Ltd v Kent Investments Ltd* (1985) 30 BLR 80 at 92, CA; *Sonat Offshore SA v Amerada Hess Development Ltd* (1987) 39 BLR 1 at 22, CA; *N E I Thompson Ltd v Wimpey Construction UK Ltd* (1987) 39 BLR 65, CA.

Nominated vs. domestic subcontracts

The reasons for the development of nomination were given earlier. It should be remembered that the primary motivation behind nomination was to harness the skills of specialist subcontractors at an early stage. The most significant development has been the recent trend to oblige main contractors to use specialists without using the correct nomination procedures. Whilst wishing to retain control over the contractor's choice of subcontractor, many clients are specifying which firm must be used, but circumventing nomination by using the arrangements for domestic subcontractors. There is an inherent contradiction with this misuse of the contractual provisions. Typically, general contractors in the building industry exclude design liability for the main contractor. Therefore, building contractors cannot assume design liability for their subcontractors, whether nominated or domestic. The STC must contribute design information otherwise the project cannot be built. And the designer must have access to that design information. Under these circumstances, the contractor cannot manage the design process. Therefore, this approach does not solve the fundamental design management problem and worse, it complicates and obscures the true picture.

Design warranties

> *Where specialist contractors undertake design, their appointment should be separated into two agreements and the design part should be subcontracted from the architect. The architect should have responsibility and should not be permitted to pass the buck. (Interview statement)*

Far from echoing the sentiment of the interview quote, the interviews have shown that clients are seeking to resolve the design contract anomaly by seeking direct warranties between themselves and the STCs. These agreements are becoming very complex because each problem encountered by a client leads them to include an extra term in their own evolving standard version of a design warranty. Whilst it may well be good practice to keep these documents up to date by adding new terms, it is bad practice to retain permanently every item which has ever been considered necessary. This incremental approach to adding clauses leads to immensely complex documents covering every eventuality and requiring extensive legal advice merely to interpret them. This is exemplified by the following interview extract:

> *Only yesterday I received a contract document of 190 pages, much of it being the design warranty, for £10,000 of work.*

This typifies many of the comments made by STCs who are increasingly worried about the complexity of the documents they are required to price. All of the specialist trade organisations interviewed said that they spend a considerable amount of their resources advising their members on the implications of one-off clauses.

Liability for late completion

A source of much discontent among subcontractors, especially small firms, is their liability in the event of a delay in completion. This discontent is expressed particularly in relation to those subcontracts that make provision for liquidated and ascertained damages (LADs) at a level equivalent to the level of LADs in the main contract (an undesirable practice, as explained below). To the subcontractors concerned, this seems unfair and excessive, since they are responsible only for part of the works, while the sums involved may well exceed their annual turnover. However, from the point of view of the main contractor, a subcontractor who delays the completion of the entire project can cause enormous losses; not only any liquidated damages for which the main contractor may become liable, but also the prolongation costs of both the main contractor and other subcontractors (to whom the main contractor is liable in turn). It would appear that if the main contractor is to be protected, every subcontractor must be potentially liable to this extent and further, then these liabilities

should all be underwritten by bank or parent company guarantees.

However, the temptation to provide for such stringent liquidated damages in a subcontract is one which should be resisted. This is because a liquidated damages provision, in order avoid being struck down by the courts as a penalty, must represent a genuine pre-estimate of the employer's loss which is likely to result from delay. Setting subcontract LADs at the same level as those under the main contract is almost bound to fail this test, since the main contractor will usually incur additional losses. Moreover, where a nominated subcontractor's delay is a ground on which the main contractor is entitled to an extension of time, LADs will not be payable under the main contract at all, so that the subcontract figure will again fail the "penalty" test.

Agreement to programmes

It is ironic that an STC acting as a subcontractor is usually required to perform exactly to the requirements of a main contractor, even though good and comprehensive programme information is rarely available from main contractors[22]. The requirements are particularly onerous when they are linked to the STC's liability for co-ordination with the work of other STCs. Together, these two factors impose an obligation upon STCs to adhere strictly to a poorly defined programme, and to integrate their own work with others.

Protection of work

A commonly found clause requires STCs to be responsible for the protection of their work from damage "howsoever caused". This can apply irrespective of whether the STC is still on site, and irrespective of the stage of the main contract. Clearly, this level of risk for the STC is difficult to price, and expensive (if not impossible) to control.

Responding to amended contracts

The survey showed that over 80% of STCs qualify their bids, and the remainder add qualifications during the negotiations which lead to the signing of the contract. More than half seek legal advice and 31% consult their trade associations. The responses to the survey and information from the interviews indicate that the bidding process has two distinct stages. First, the STC prices the work to be done and negotiations firm this up. The second stage is the negotiations about the risk elements. STCs either seek to amend the clauses or negotiate a suitable payment for taking the risk. The success of STCs in dealing with risks in this way is dependent upon the relative economic power of the two negotiating parties, and the extent to which a main contractor needs to ensure consistency between subcontracts and the main contract terms (commonly referred to as ensuring that the contracts are "back-to-back").

The fact that so many STCs qualify their bids and enter into negotiations about contractual terms indicates that there are many firms who understand the significance of the risks that are being allocated to them. The survey and interviews revealed that a large proportion of contractors, consultants and subcontractors have little real understanding of the contracts they are using. The confusion, particularly with regard to standard forms of contract, is the source of many severe problems. It is important for all involved in the construction process to be more aware of the relationships between the business deals that they do and the contracts which purport to record their deals. While this problem is not unique to the construction industry[23], the extent to which standard forms are relied upon in construction is particularly worrying.

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[22] Greenwood, D (1993) *Op cit*

[23] Beale H and Dugdale, A (1975) Contracts between businessmen: planning and the use of contractual remedies. *British Journal of Law and Society*, **2**, 45-60.

Good commercial and contracting practice

Many of the bad practices that have been exposed cause immense harm to the whole industry, not just to the immediate victims. For example, a main contractor who forces a subcontractor into liquidation faces problems of disruption. Someone in the team faces the need to find a replacement and the client will face escalating costs. The discussions in this paper point to some clear conclusions:

- Although nomination has declined, there remains the need to harness the skills of specialists at an early stage in the process.
- Subcontract problems are dominated by misunderstanding and vagueness.
- Procurement choice should be influenced by the nature of specialist input for the job.
- Contracts should be negotiated and explicit: they should accurately record the deal that was struck.
- These is generally insufficient awareness of the relationships between legal doctrines of contract and the negotiation of business deals.
- Onerous contract terms should be avoided because they beget qualified bids, extra negotiations and rancour
- Good cash flow management is essential to the success of contractors and subcontractors
- Project requirements should be clearly defined to reduce payment uncertainty
- Subcontractors' potential liabilities should be underwritten

Commercial practice in the construction industry will only improve when all parties recognise that their long term interests will be served by respecting the commercial needs of their trading partners.